

Notice of Allowability

Application No.

10/756,054

Examiner

Michael P. Nghiem

Applicant(s)

LIN ET AL.

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed on 22 February 2005.
2. ☒ The allowed claim(s) is/are 1-6.
3. ☒ The drawings filed on 22 February 2005 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

This examiner's amendment corrects minor objections to claims 5 and 6.

2. The application has been amended as follows:

Replace Claim 5 with the following:

-- 5. A method of measuring the azimuth with an azimuth meter, wherein the azimuth meter has been reset to zero azimuth ~~[[as]]~~ according to the method claimed in claim 3, comprising the steps of:

taking multiple samples respectively using two orthogonal magnetic sensors, and outputting corresponding first and second magnetic induction signals;

multiplying the second magnetic induction signals by ~~[[the]]~~ a differential ratio R1, wherein the differential ratio R1 is generated by the steps of:

collecting multiple samples with different azimuths in the longitudinal and latitudinal orientations using two orthogonal magnetic sensors, and outputting first and second sine wave signals;

adjusting the amplitudes of one of the first and second sine wave signals such that the amplitudes of the first sine wave signals and the amplitudes of the second sine wave signal are equal;

comparing the sample values in each set respectively represented by the first and second sine wave signals to generate the maximum and minimum values;

computing the average values based on the maximum and minimum values of the first and second sine wave signals, respectively, and taking each of the average values to be the zero reference value of the first and second sine wave signals, respectively, to produce reference first and second sine wave signals; and

comparing the maximum value (X_{max}) of the first sine wave signals and the maximum value (Y_{max}) of the second sine wave signals to yield a differential ratio $R1 = X_{max}/Y_{max}$; and

comparing amplitudes of the first magnetic induction signals with an adjusted amplitude of the reference first sine wave signals, and comparing amplitudes of the second magnetic induction signals with an adjusted amplitude of the reference second sine wave signals, in order to generate the azimuth. --

In Claim 6:

Line 4, after "azimuth", delete "as" and insert – according to the method –.

Reasons For Allowance

3. The method as claimed wherein computing the average values based on the maximum and minimum values of the first and second sine wave signals, respectively, and taking each of the average values to be the zero reference value of the first and second sine wave signals, respectively, to produce reference first and second sine wave signals (claim 1) is not disclosed, suggested, or made obvious by the prior art of record.

Kato (US 6,606,799) discloses a method wherein "the middle values of the maximum values and minimum values of V_x and V_y constitute reference values and the amplitude becomes 1" (column 32, lines 34-36). Thus, Kato does not disclose taking each of the average values to be the zero reference value of the first and second sine wave signals, respectively, to produce reference first and second sine wave signals.

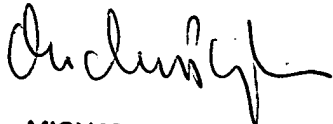
Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P Nghiem whose telephone number is (571) 272-2277. The examiner can normally be reached on M-H.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



MICHAEL NGHIEM
PRIMARY EXAMINER

Michael Nghiem

March 2, 2005